

REMARKS

Applicant would like to, first, draw the Examiner's attention to the title of the application. While Applicant filed the application with the title "Improvements in or Relating to Valves," the United States Patent and Trademark Office has incorrectly identified the above application as "Valves." Applicant requests that the United States Patent and Trademark Office records be updated to correctly reflect the title.

Applicant has carefully reviewed the final Office Action dated February 6, 2009, and the Advisory Action dated April 10, 2009, relating to the subject patent application. Based on the foregoing claim amendments and the following remarks, Applicant submits that the pending claims are in condition for allowance. Reconsideration of the amended claims and issuance of a notice of allowance are respectfully requested.

Status of the Claims

Claims 1, 4-6 and 31-34 are currently pending in this patent application. Claims 7-15 and 19-30 were previously withdrawn from consideration in response to an earlier restriction requirement under 35 U.S.C. 121 and 372. Claims 2, 3, 16 and 17 were previously canceled. Claim 18 is canceled herein. Claims 1, 4, 5 and 32 are amended. Support for the amendment to Claim 1 can be found in the originally filed specification on page 12, lines 4-12. Claim 4 is amended for clarification purposes. Support for the amendment to Claim 5 can be found in original Claim 18. Support for the amendment to Claim 32 can be found in the originally filed specification on page 15, lines 11-13.

Claims 4, 6, 31 and 33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite. Claims 1, 5, 18, 32 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable.

Claimed Invention

Independent Claim 1 relates to a valve including a valve housing providing a chamber accommodating at least part of a valve member, said chamber forming at least part of a first or high pressure side of said valve, a valve port leading from said chamber to a second or low-pressure side of said valve, a valve seat around the valve port, said valve member having a seating surface co-operating with the valve seat and the valve member being displaceable, along an axis passing through said port, respectively (a) in a first direction, to move said seating

surface into said chamber and away from said valve seat and (b) in a second, opposite direction, to move said seating surface towards said valve seat, biasing means being provided biasing said valve member in said second direction towards its closed position, the valve housing having an extension extending, in said second direction, beyond said port and forming a transverse wall at an axial end of said extension at a distance from said port, said extension having an axial bore extending from said port and forming a central aperture in said transverse wall, which aperture forms a bearing for an axial extension of said valve member through which bearing said axial extension passes as a sliding fit, whereby the valve member is guided for said axial movement, said axial bore being bored out to a seat diameter of the valve port up to a distance just short of said transverse wall to provide a passage for gas from said port and at least one transverse outlet bore radiating from said axial bore to a respective opening in a side wall of said extension, on the periphery of the valve housing, so that gas outflow from said port is translated from the axial sense to the radial sense, the transverse wall serving to deflect any gas proceeding from said valve port in a direction parallel with said valve axis, wherein the periphery of said extension of the valve housing is undercut in the region behind the transverse wall, in such a way that said undercut region becomes gradually increasingly spaced from said axis with distance, measured parallel with said axis, away from said transverse wall, so that over said undercut region, the peripheral surface of the valve body is inclined with respect to said axis, and wherein one or each said opening or openings at the side of the valve body opens onto said inclined peripheral surface which serves to direct any gas exiting the opening or openings in a downward direction towards an outlet port of the valve.

Independent Claim 4 relates to a valve including a valve housing providing a chamber accommodating at least part of a valve member, said chamber forming at least part of a first or high pressure side of said valve, a valve port leading from said chamber to a second or low-pressure side of said valve, a valve seat around the valve port, said valve member having a seating surface co-operating with the valve seat and the valve member being displaceable, along an axis passing through said port, respectively (a) in a first direction, to move said seating surface into said chamber and away from said valve seat and (b) in a second, opposite direction, to move said seating surface towards said valve seat, the valve member having a bore extending axially from the high pressure end thereof and forming a cylinder sealingly slidable, in said first and second directions, on a piston fixed within said valve housing, to define therewith a further

chamber, biasing means being provided biasing said valve member in said second direction towards its closed position, said further chamber in either case communicating with the low pressure side of the valve, and wherein said piston has a base part or a supporting insert providing an outer periphery received in an internal recess or groove provided around a bore which extends axially into the valve housing from a high pressure end thereof and which bore at least partially defines said chamber accommodating the valve member, said internal recess or groove being disposed at a location remote from said valve seat, the valve housing having one or more longitudinal slits therethrough extending from the high pressure end of the valve housing, adjacent said internal groove or recess and extending through the location of said internal groove or recess, the material of the valve housing being sufficiently resilient to allow the wall of the valve housing to be flexed outwardly sufficiently to allow said base part or insert to pass within said bore in the valve housing from said high pressure end thereof to the axial position of said internal groove or recess and to allow the wall of the valve housing thereafter to spring back around said base part or insert to locate said base part or insert in said internal groove or recess.

Independent Claim 5 relates to a valve including a valve housing providing a chamber accommodating at least part of a valve member, said chamber forming at least part of a first or high pressure side of said valve, a valve port leading from said chamber to a second or low-pressure side of said valve, a valve seat around the valve port, said valve member having a seating surface co-operating with the valve seat and the valve member being displaceable, along an axis passing through said port, respectively (a) in a first direction, to move said seating surface into said chamber and away from said valve seat and (b) in a second, opposite direction, to move said seating surface towards said valve seat, the valve member having a bore extending axially from the high pressure end thereof and forming a cylinder sealingly slidable, in said first and second directions, on a piston fixed within said valve housing, to define therewith a further chamber, biasing means being provided biasing said valve member in said second direction towards its closed position, said further chamber in either case communicating with the low pressure side of the valve, and wherein said piston has a base part or supporting insert providing an outer periphery received in an internal recess or groove provided around a bore which extends axially into the valve housing from a high pressure end thereof and which bore at least partially defines said chamber accommodating the valve member, said internal recess or groove being disposed at a location remote from said valve seat, wherein the base part or supporting insert is

designed for resilient inward flexing to allow it to be inserted in the bore in the valve housing from said high pressure end thereof to spring into said groove when the base part or insert is at the longitudinal position of said internal groove or recess, thereby to retain said piston in place, wherein the lower edge of the bore in the valve housing is internally chamfered and/or wherein the outer edge of said base part is externally chamfered, to facilitate insertion of the base part or insert into the bore in the valve housing from said lower end of the valve housing, wherein the lower edge is the high pressure edge and the lower end is the high pressure end.

Objection to Drawings

The Examiner objects to Figures 1-4 asserting that these figures should be designated by a legend such as –Prior Art--. Corrected replacement drawings in accordance with the Examiner’s suggestion are filed herewith. Each of the replacement drawings are labeled as “Replacement Sheet” in accordance with 37 CFR 1.84(c). Applicant submits that the corrected replacement drawings are in compliance with 37 CFR 1.121(d) and therefore this objection is moot.

Rejection of Claims 4, 6, 31 and 33 under 35 U.S.C. 112, Second Paragraph

The Examiner rejects Claims 4, 6, 31 and 33 under 35 U.S.C. 112, second paragraph, as being indefinite because it is unclear whether the feature in the parentheses in lines 21-22 is part of the claim or not. Applicant has amended Claim 4 to delete the parentheses and the text recited therein from the claim and therefore, Applicant submits that Claim 4 as amended is in compliance with 35 U.S.C. 112, second paragraph, and overcomes this rejection. Applicant submits that dependent Claims 6, 31 and 33 also overcome this rejection because these claims depend from a patentable base claim, i.e., independent Claim 4.

Rejection of Claim 1 Under 35 U.S.C. 103(a)

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 2,806,481 to Faust (“Faust”) in view of United States Patent No. 4,799,285 to Berfield (“Berfield”). Applicant submits that Claim 1 is amended and as amended Claim 1 is distinguishable from the Faust reference. For example, as acknowledged by the Examiner, Faust does not disclose an undercut region as recited in Claim 1. Further, Applicant submits that there

is nothing in Faust to teach or suggest that the inclined peripheral surface serves to direct any gas exiting the opening or openings in a downward direction towards an outlet port of the valve, as recited in Claim 1. For these reasons, Applicant submits that the claimed invention of independent Claim 1 is patentably distinguishable from Faust.

The Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Faust's invention based on Berfield. Applicant respectfully disagrees.

Berfield relates to an outlet port baffle for an air or gas exhaust port for a vacuum. There is nothing in Berfield to teach or suggest a valve or valve housing having the features recited in Claim 1 and therefore, Claim 1 is patentably distinguishable from Berfield. When considering the combination of Faust and Berfield, Applicant submits that there is nothing in either reference to teach or suggest such combination. In Faust, there is no teaching or suggestion of sloping or inclining the peripheral surface containing the gas outlet openings to direct flow therefrom. Thus, there would be no motivation for one of ordinary skill to modify Faust based on Berfield. Further, one of ordinary skill in the art would not look to Berfield to modify the pressure regulator disclosed in Faust. Berfield is not related to pressure regulators or a valve of any kind. Further, even if such combination were proper (which Applicant submits is improper), Berfield does not overcome the shortcomings of Faust. Berfield relates to an outlet port having an intermediate section 30 (see Figures 1 and 3) with two rows of apertures 42 and 44, and projecting ridges 40a, 40b and 40c for directing the gas or air radially outward thereof. The apertures permit air dispersal over a 180 degree arc. There is no teaching or suggestion in Berfield to direct the flow of air or gas downward as it exits the apertures therefrom. Thus, Applicant submits that the claimed invention as recited in Claim 1 is patentably distinguishable and non-obvious based on Faust, Berfield or the combination thereof.

Rejection of Claim 5 Under 35 U.S.C. 103(a)

The Examiner rejects Claim 5 under 35 U.S.C. 103(a) as being unpatentable over Faust in view of United States Patent Application Publication No. 2003/0085372 to Newton ("Newton"). Applicant submits that Claim 5 is amended and as amended Claim 5 overcomes this rejection. Faust, as acknowledged by the Examiner, does not disclose that the base part or supporting insert is designed for resilient inward flexing as recited in Claim 5. Thus, the claimed invention of

Claim 5 is patentably distinguishable over Faust. However, the Examiner alleges that it would have been obvious to one having ordinary skill in the art at the time of the invention to modify Faust based on Newton. Applicant respectfully disagrees.

Newton is directed to a medical valve having rotational snap fit structures for mating one portion of the valve to another portion of the valve. There is nothing in Newton to teach or suggest a part being internally chamfered and/or externally chamfered to facilitate insertion of a part, as recited in Claim 5 of the claimed invention. Thus, Applicant submits that Claim 5 is patentably distinguishable over Newton.

In considering the combination of Faust and Newton, Applicant submits that there is no teaching or suggestion in either reference to teach such combination and therefore Applicant submits that such combination is improper. However, even if such combination were proper, Applicant submits that the combination of Faust and Newton still would not teach or suggest the claimed invention as recited in Claim 5. The Newton reference does not overcome the shortcomings of the Faust reference. Neither Faust or Newton teach or disclose the edge of a bore being internally chamfered and/or externally chamfered to facilitate insertion of a part, as recited in Claim 5. Thus, Applicant submits that Claim 5 is patentably distinguishable and non-obvious over Faust, Newton or the combination thereof.

Rejection of Claim 18 Under 35 U.S.C. 103(a)

The Examiner rejects Claim 18 under 35 U.S.C. 103(a) as being unpatentable over Faust in view of Newton further in view of United States Patent No. 3,058,717 to Wiltse ("Wiltse"). Applicant submits that Claim 18 is canceled. The feature of dependent Claim 18 is incorporated into independent Claim 5. Applicant submits that Claim 5 overcomes this rejection. For the reasons set forth above, which are equally applicable in this context, Applicant submits that Claim 5 is patentably distinguishable and non-obvious based on Faust and Newton. In regards to the combination of Faust, Newton and Wiltse, Applicant submits that there is nothing in any of these references to teach or suggest such combination and thus, such combination is improper. Wiltse relates to fluid flow coupling and closure devices and does not teach or suggest valves. One of ordinary skill in the art would not look to Wiltse to modify the pressure regulator in Faust or the medical valve in Newton to obtain the claimed invention. Furthermore, there is no teaching or suggestion in Wiltse of a part or supporting insert being designed for resilient inward

flexing to allow the part to be inserted in a bore and to spring into a groove when the base part or insert is at a longitudinal position therein. Thus, Applicant submits that Claim 5 is patentably distinguishable and non-obvious over Faust, or Newton, or Wiltse, or any combination thereof.

Rejection of Claim 5 Under 35 U.S.C. 103(a)

The Examiner rejects Claim 5 under 35 U.S.C. 103(a) as being unpatentable over Great Britain Patent 2298026 to Kay (“Kay”) in view of Newton. Applicant submits that Claim 5 is amended and as amended Claim 5 overcomes this rejection. Kay, as acknowledged by the Examiner, does not disclose that the base part or supporting insert is designed for resilient inward flexing as recited in Claim 5. Thus, the claimed invention of Claim 5 is patentably distinguishable over Kay. However, the Examiner alleges that it would have been obvious to one having ordinary skill in the art at the time of the invention to modify Kay based on Newton. Applicant respectfully disagrees.

Newton is directed to a medical valve having rotational snap fit structures for mating one portion of the valve to another portion of the valve. In Newton, the one longitudinal structure 58 includes a snap-fit structure that mates with a corresponding longitudinal snap-fit structure on the outlet housing 20. In Newton (see [0047]), the inlet housing 18 stretches radially (outward) until the two parts mate and when mated, the inlet housing contracts. Newton does not teach or suggest the base part or supporting insert flexing inward to allow it to be inserted in a bore, as recited in Claim 5 of the claimed invention. Furthermore, there is nothing in Newton to teach or suggest a part being internally chamfered and/or externally chamfered to facilitate insertion of a part, as recited in Claim 5 of the claimed invention. Thus, Applicant submits that Claim 5 is patentably distinguishable over Newton.

In considering the combination of Kay and Newton, Applicant submits that there is no teaching or suggestion in either reference to teach such combination and therefore Applicant submits that such combination is improper. However, even if such combination were proper, Applicant submits that the combination of Kay and Newton still would not teach or suggest the claimed invention as recited in Claim 5. The Newton reference does not overcome the shortcomings of the Kay reference and therefore, Applicant submits that Claim 5 is patentably distinguishable and non-obvious over Kay, Newton or the combination thereof.

Rejection of Claims 32 and 34 Under 35 U.S.C. 103(a)

The Examiner rejects Claims 32 and 34 under 35 U.S.C. 103(a) as being unpatentable over Kay in view of Newton further in view of United States Patent No. 3,167,323 to Appleton et al. ("Appleton"). Applicant submits that dependent Claims 32 and 34 depend from independent Claim 5. Applicant further submits that Claim 5 is amended and as amended Claim 5 is patentably distinguishable and non-obvious over Kay and Newton for the reasons as set forth above herein, which reasons are equally applicable in this context. Moreover, Applicant submits that Claim 5 is patentable and non-obvious over Appleton. Appleton relates to a seal for fluids and does not teach or suggest a valve having the features as recited in Claim 5. Thus, because Claim 5 is patentable and non-obvious over Kay, or Newton, or Appleton, or the combination thereof, Applicant submits that Claims 32 and 34 are also patentable and non-obvious over these references. In addition, Applicant submits that Claim 32 as amended is individually patentable over Kay, or Newton, or Appleton, or the combination thereof. None of these references teach or suggest a valve having a sealing arrangement wherein the base part has a thickness greater than twice the greatest radial thickness of the outer sleeve and greater than twice the greatest thickness of the inner sleeve, as recited in Claim 32.

Thus, Applicant submits that the rejection of Claims 32 and 34 based on Kay, or Newton, or Appleton, or the combination thereof, should not stand.

Allowable Subject Matter

The Examiner indicated that Claims 4, 6, 31 and 33 would be allowable if rewritten or amended to overcome the rejection under 35 U.S.C. 112, 2nd paragraph. As set forth previously herein, independent Claim 4 has been directly amended to overcome said rejection and Claims 6, 31 and 33 are indirectly amended as a result of their dependency from Claim 4. Thus, Applicant submits that Claims 4, 6, 31 and 33 are in condition for allowance.

CONCLUSION

Applicant submits that based on the reasoning set forth herein, the pending Claims 1, 4-6 and 31-34 are patentable over the prior art of record, relied upon and not relied upon, as cited by the Examiner. Thus, Applicant respectfully requests reconsideration of the claims and the prompt issuance of a notice of allowance.

Respectfully submitted,



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